

What is claimed is:

1. An apparatus for determining the critical length of a conductor comprising:  
at least one device under test (DUT);  
said at least one DUT including at least one test strip of a metal under test,  
5       said at least one test strip formed from a series of segments of the metal  
under test.
2. The apparatus of claim 1, wherein said apparatus includes a plurality of said  
DUTs, and wherein said segments of each of said plurality of DUTs has a unique  
length.
- 10   3. The apparatus of claim 1, wherein said system is configured to detect  
electromigration in said DUT using Blech's law.
4. The apparatus of claim 2, further including decoder and selection circuitry for  
each said DUT.
- 5   5. The apparatus of claim 4, wherein said DUT is embodied within a integrated  
circuit.
6. The apparatus of claim 5, wherein said integrated circuit containing said DUT is  
mounted on a hot chuck.
7. The apparatus of claim 3, wherein said plurality of DUT include metal strips  
under test ranging in length from approximately  $10\mu\text{m}$  to  $320\mu\text{m}$ .
- 20   8. The apparatus of claim 7, wherein said metal strips of said segments are coupled  
together with segments of a connecting metal.
9. The apparatus of claim 8, wherein said connecting metal segments are  
approximately three times wider than the corresponding metal strip under test.

10. The apparatus of claim 9, wherein said metal strips under test and said connecting metal are coupled with vias.
11. The apparatus of claim 10, wherein said vias are formed from a electromigration-resistant metal.
- 5 12. The apparatus of claim 11, wherein said vias of formed from tungsten.
13. The apparatus of claim 3, wherein said system is further configured to detect a rising voltage drop across said metal strips under test.
14. A method for determining the critical length of a conductor comprising:  
providing at least one DUT, said at least one DUT including at least one test strip of a metal under test, said at least one test strip formed from a series of segments of the metal under test;  
providing a test signal to said at least one DUT;  
sensing an output signal from said at least one DUT; and  
determining the critical length of a conductor from said output signal.
15. The method of claim 14, wherein said act of determining the critical length of a conductor is performed using Blech's law.
16. An apparatus for determining the critical length of a conductor comprising:  
testing means for providing a test signal to at least one DUT, said at least one DUT including at least one test strip of a metal under test, said at least one test strip formed from a series of segments of the metal under test;  
20 means for providing a test signal to said testing means;  
means for sensing an output signal from said testing means; and  
means for determining the critical length of a conductor from said output signal.

17. The apparatus of claim 16, wherein said means for determining the critical length of a conductor is configured to use Blech's law.
18. The apparatus of claim 16, wherein said apparatus includes a plurality of said DUTs, and wherein said segments of each of said plurality of DUTs has a unique length.
19. The apparatus of claim 16, wherein said system is configured to detect electromigration in said DUT using Blech's law.
20. The apparatus of claim 19, said testing means further including decoder and selection circuitry for each said DUT.
21. The apparatus of claim 20, wherein said testing means is embodied within a integrated circuit.
22. The apparatus of claim 21, wherein said integrated circuit containing said DUT is mounted on a hot chuck.
23. The apparatus of claim 18, wherein said plurality of DUTs include metal strips under test ranging in length from approximately  $10\mu\text{m}$  to  $320\mu\text{m}$ .
24. The apparatus of claim 23, wherein said metal strips of said segments are coupled together with segments of a connecting metal.
25. The apparatus of claim 24, wherein said connecting metal segments are approximately three times wider than the corresponding metal strip under test.
26. The apparatus of claim 25, wherein said metal strips under test and said connecting metal are coupled with vias.
27. The apparatus of claim 26, wherein said vias are formed from a electromigration-resistant metal.
28. The apparatus of claim 27, wherein said vias are formed from tungsten.

29. The apparatus of claim 19, wherein said apparatus is further configured to detect a rising voltage drop across said metal strips under test.

1. The apparatus of claim 19, wherein said apparatus is further configured to detect a rising voltage drop across said metal strips under test.